

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 21 NOV 2003



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Applicant's or agent's file reference 27997P WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP03/06849	International filing date (day/month/year) 27.06.2003	Priority date (day/month/year) 28.06.2002
International Patent Classification (IPC) or both national classification and IPC C01G3/00		
Applicant MAX-PLANK-GESELLSCHAFT ZUR ... et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  27.10.2003	Date of completion of this report  19.11.2003
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Nobis, B  Telephone No. +49 89 2399-8140 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP03/06849**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-18 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
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International application No. **PCT/EP03/06849**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-18
	No: Claims	
Inventive step (IS)	Yes: Claims	1-18
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1) Reference is made to the following documents:**

- D2: W. CARRILLO-CABRERA, H. G. VON SCHNERING: 'Pentatronstium Tris[tetraoxovanadate(V)] catena-Monoxocuprate(I),  $\text{Sr}_5(\text{VO}_4)_3(\text{CuO})$  - an apatite derivative with inserted linear  $[\text{CuO}]_1$ - chains' Z. ANORG. ALLG. CHEM., vol. 625, 1999, page 183-185 XP009017131 cited in the application
- D3: P. PATEL, O. AGRAWAL: 'Preparation and characterisation of mixed (Ca+Ba+Cu) hydroxylapatites' J. INDIAN CHEM. SOC., vol. 61, no. 10, 1984, pages 906-907, XP009017132

**2) Novelty - Art. 33 (1) and (2) PCT**

D2 discloses  $\text{Sr}_5(\text{VO}_4)_3(\text{CuO})$  as disclaimed from claim 1. Therefore, in the light of D2, novelty is acknowledged for the subject-matter of claims 1-18.

D3 discloses  $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ , wherein some of the  $\text{Ca}^{2+}$  (M) are replaced by  $\text{Cu}^{2+}$ ; there are no CuO in hexagonal channels (position of X) of the apatite structure. Therefore, in the light of D3, novelty is acknowledged for the subject-matter of claims 1-18.

**3) Inventive Step - Art. 33 (1) and (3) PCT**

The technical problem underlying the present invention can be seen in providing improved brightly colored, stable and cheap ceramic pigments for imparting color to artificial articles. This problem is overcome by the present invention by a compound having the general formula  $\text{M}_5(\text{AO}_4)_3\text{X}$  wherein X is situated in the hexagonal channels of the apatite structure and includes Cu-atoms.

None of the cited documents discloses a pigment having the composition and structure of the compound claimed in the present application, nor do they give any disclosure of a process as the one claimed.